Amendments to the Drawings:

The attached replacement sheet of drawings includes changes to Fig. 4 to correct labeling errors in the original drawings. Support is found, for example, at paragraphs [0063] and [0067] of the specification. This replacement sheet, which includes Fig. 4, replaces the original sheet including Fig. 4. In Fig. 4, reference character 46 replaces reference character 40 and reference character 41 replaces one instance of reference character 29.

Attachment: One Replacement Sheet of Drawings

REMARKS/ARGUMENTS

Claim 15 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Claims 10, 11 and 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Tassakos (DE 19930087) in view of Alborante (EU-470939). Claim 15 was rejected under 35 U.S.C. 103(a) as being unpatentable over Tassakos in view of Alborante and NIST Manufacturing Engineering Laboratory, "ISD's Research Areas: Intelligent Open Architecture Control of Manufacturing Systems" ("NIST"). Claim 17 was rejected under 35 U.S.C. 103(a) as being unpatentable over Alborante in view of Yoshimi, "Active Uncalibrated Visual Servoing." Claim 18 was rejected under U.S.C. 103(a) as being unpatentable over Alborante in view of Yoshimi and Pryor (US 4,666,303). Claims 10, 11, 17 and 18 were provisionally rejected on the ground of nonstatutory double patenting over claims 9, 10, 15 and 16 of copending Application No. 10/527,629.

Claims 12 to 14 were objected to as being dependent upon a rejected base claim, but were indicated as being allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 10, 15 and 17 have been amended and new claims 19 to 22 have been added. Support is found in the original claims and at paragraphs [0051] and [0077], for example. New claims 20 to 22 include limitations that are similar to the limitations of claims 12 to 14.

The specification and drawings have been amended to correct informalities. No new matter has been added.

Reconsideration of the application is respectfully requested.

Information Disclosure Statement of March 14, 2005

The Examiner stated in the Office Action that "Integrated Architecture Logix Platforms", December 2000 by Rockwell Automation CD-ROM Publication Number 957173-04, XP 002278110 was not considered because CD-ROM is not available for review. It is respectfully submitted that a paper copy of this reference was filed on March 14, 2005. Acknowledgement of this paper copy is respectfully requested.

35 U.S.C. §112 Rejection

Claim 15 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

Claim 15 has been amended and is now submitted as being clear and definite.

Withdrawal of the rejection under 35 U.S.C. 112, second paragraph, of claim 15 is respectfully requested.

35 U.S.C. §103(a) Rejections: Tassakos and Alborante

Claims 10, 11 and 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Tassakos (DE 19930087) in view of Alborante (EU-470939).

Tassakos discloses a method and device for controlling the intermediate position of a manipulator 2 of a handling device 1. A sunroof 4 of a motor vehicle is grasped by manipulator 2 and inserted in a corresponding opening 3 in a roof 5 of a body of the motor vehicle. (Paragraph [0053] of English translation). Four sensors 9 are mounted on manipulator 2 and are used to establish a relation between the form of edges 10 and manipulator 2. (Paragraph [0057] of English translation).

Alborante is discussed at paragraphs [0004] to [0007] of the present application.

Claim 1, as amended, recites "[a] method for mounting a flap on a workpiece, the flap being positioned precisely with respect to a reference area on the workpiece using a gripping tool guided by a robot, the gripping tool including a securing device for holding the flap and a sensor system fixedly connected to the gripping tool, the sensor system including at least one sensor, the method including:

moving the gripping tool during a positioning phase from a proximity position independent of a workpiece position of the workpiece in a working space of the robot into a mounting position, the flap in the mounting position being held in the gripping tool and being oriented in a precisely positioned fashion with respect to the reference area of the workpiece, the flap being connected to the workpiece in the mounting position of the gripping tool,

the moving including running an iterative closed-loop control process, the closed-loop control process including:

measuring together both a selected region of the flap and a selected region of the workpiece with the at least one sensor and generating an actual measured value based on a position of the selected region of the flap and a position of the selected region of the workpiece;

comparing the actual measured value with a setpoint measured value generated during a setup phase,

calculating a movement vector of the gripping tool from a difference between the actual measured value and the setpoint measured value using a Jacobi matrix calculated during the setup phase; and

moving the gripping tool by an amount equal to the movement vector."

It is respectfully submitted that neither Tassakos nor Alborante discloses "measuring together both a selected region of the flap and a selected region of the workpiece with the at least one sensor and generating an actual measured value based on a position of the selected region of the flap and a position of the selected region of the workpiece" as now recited in claim 10. Tassakos discloses sensing only a roof 5 of a motor vehicle into which a manipulator 2 is to insert a sunroof 4. Because Tassakos mentions no sensing of sunroof 4, Tassakos does not disclose or teach this limitation of claim 10. The system of Alborante detects door opening V without door D being present and then subsequently detects door D. (See Alborante, col. 3 lines 28 to 53; paragraphs [0004] to [0007] of the present specification). Thus, Alborante also does not disclose or teach "measuring together both a selected region of the flap and a selected region of the workpiece with the at least one sensor" as required by claim 10 and Alborante provides no reason for one of skill in the art to modify Tassakos to satisfy this limitation. Thus, claim 10 would not have been obvious in view of Tassakos and Alborante.

Withdrawal of the rejection under 35 U.S.C. 103(a) of claim 10 is respectfully requested.

35 U.S.C. §103(a) Rejections: Tassakos, Alborante and NIST

Claim 15 was rejected under 35 U.S.C. 103(a) as being unpatentable over Tassakos in view of Alborante and NIST Manufacturing Engineering Laboratory, "ISD's Research Areas: Intelligent Open Architecture Control of Manufacturing Systems" ("NIST").

Tassakos and Alborante are described above.

NIST is cited by the Examiner as disclosing a TCP/IP for robot controls and does not cure the deficiencies of Tassakos and Alborante with respect to claim 10, from which claim 15 depends. In view of the above arguments with respect to why claim 10 is not unpatentable in view of Tassakos and Alborante, withdrawal of the rejection under 35 U.S.C. 103(a) of claim 15 is respectfully requested.

35 U.S.C. §103(a) Rejections: Alborante and Yoshimi

Claim 17 was rejected under 35 U.S.C. 103(a) as being unpatentable over Alborante in view of Yoshimi, "Active Uncalibrated Visual Servoing."

Alborante is described above.

Yoshimi discloses a method "for visual control of a robotic system which does not require the formulation of an explicit calibration between image space and the world coordinate system." (Page 1, abstract). Yoshimi describes using the robotic system to place a peg into a hole.

Claim 17, as amended, recites "[a] device for mounting a flap on a workpiece comprising:

a gripping tool for gripping the flap, the gripping tool guided using a robot;

a sensor system fixedly connected to the gripping tool and including a metrically-non-calibrated sensor, the sensor system being fixedly connected to the gripping tool in such a way that the sensor system is capable of measuring together both a selected region of the flap and a selected region of the workpiece with the at least one sensor and generating an actual measured value based on a position of the selected region of the flap and a position of the selected region of the workpiece;

an open-loop control system for open-loop controlling the robot and the gripping tool; and

an evaluation unit for evaluating measured values of the sensor system."

It is respectfully submitted that neither Alborante nor Yoshimi discloses "a sensor system fixedly connected to the gripping tool and including a metrically-non-calibrated sensor, the sensor system being fixedly connected to the gripping tool in such a way that the sensor system is capable of measuring together both a selected region of the flap and a selected region of the workpiece with the at least one sensor and generating an actual measured value based on a

position of the selected region of the flap and a position of the selected region of the workpiece" as now recited in claim 17. As discussed above, the system of Alborante detects door opening V without door D being present and then subsequently detects door D and thus does not meet this limitation of claim 17. (See Alborante, col. 3 lines 28 to 53; paragraphs [0004] to [0007] of the present specification). Also, it would not have been obvious to one of skill in the art to have modified the system of Alborante in view of Yoshimi to meet this limitation because the camera in the robotic system of Yoshimi senses only a hole that a peg is to be placed into and not the peg. (Page 2, first paragraph).

Withdrawal of the rejections under 35 U.S.C. 103(a) of claim 17 is respectfully requested.

35 U.S.C. §103(a) Rejections: Alborante, Yoshimi and Pryor

Claim 18 was rejected under U.S.C. 103(a) as being unpatentable over Alborante in view of Yoshimi and Pryor (US 4,666,303).

Alborante and Yoshimi are described above.

Pryor discloses "electro-optically based sensor units of use in measuring the 'fit up' of panels as on car bodies, aircraft, etc. The disclosed invention is capable of measuring both the gap between the adjacent panels and their relative positions to obtain the width of the gap, the location of the edges of the panels can be estimated by fitting curves to the measured data, or 'flushness,' in the direction out of plane." (Abstract).

Claim 18 recites "[t]he device as recited in claim 17 wherein the sensor is an optical gap measuring sensor."

It is respectfully submitted that one of skill in the art would not have had any reason to have substituted the sensor unit of Pryor for the cameras of Alborante. Alborante specifically desires detecting door opening V without door D being present and then subsequently detecting door D and thus teaches away from using sensor unit of Pryor to measure any gaps.

Withdrawal of the rejection under 35 U.S.C. 103(a) of claim 18 is respectfully requested.

Double Patenting Rejections

Claims 10, 11, 17 and 18 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting over claims 9, 10, 15 and 16 of copending Application No. 10/527,629. Applicants will file a terminal disclaimer at the appropriate time to overcome this rejection.

Claim Objections

Claims 12 to 14 were objected to as being dependent upon a rejected base claim, but were indicated as being allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In view of the above, withdrawal of the objections to claims 12 to 14 is respectfully requested.

CONCLUSION

The present application is respectfully submitted as being in condition for allowance and applicants respectfully request such action.

Respectfully submitted,
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